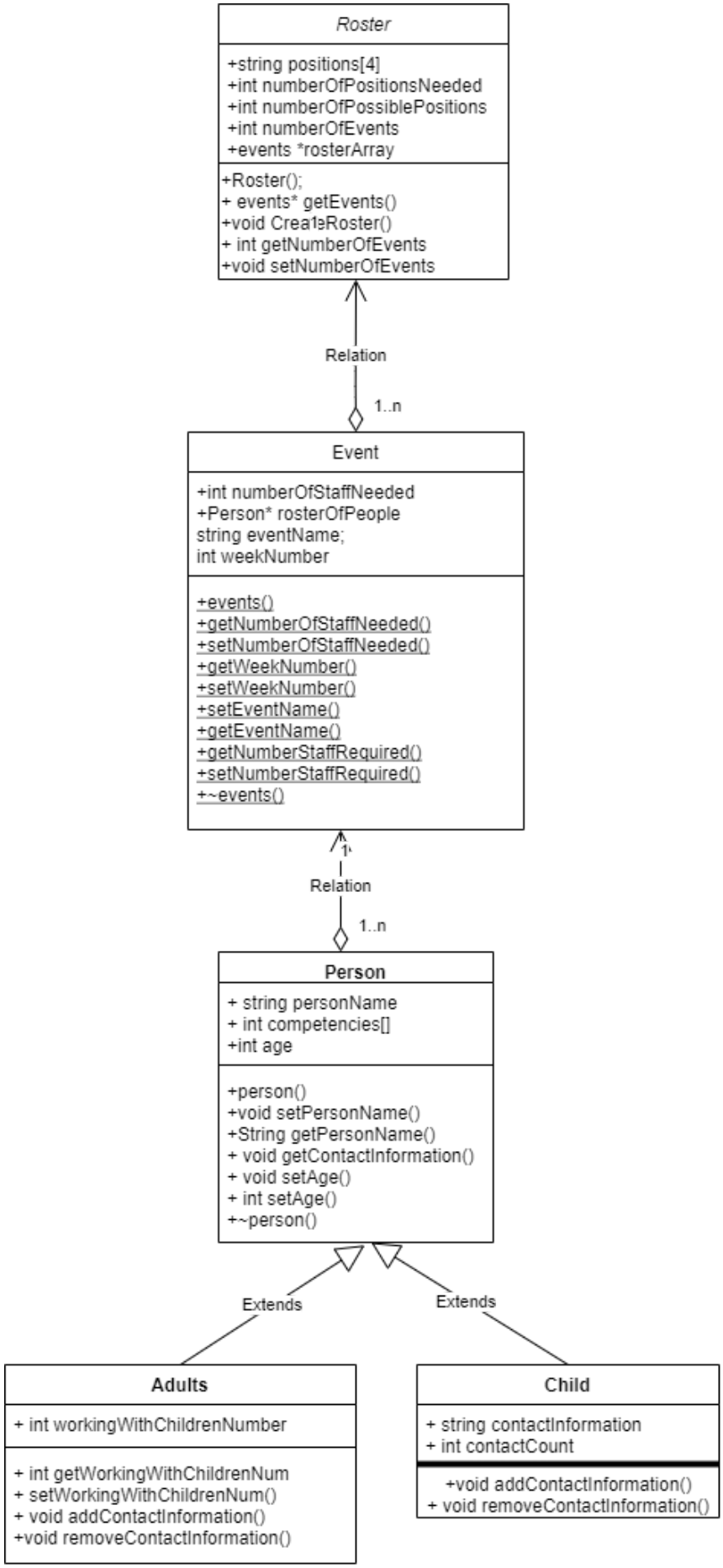
Design Description

Assessment Concepts

1. Memory allocation from the **stack** and the **heap**
    - Arrays
    - Strings
    - Objects
2. User Input and Output
    - I/O of different data types
3. Object-oriented programming and design
    - Inheritance
    - Polymorphism
    - Abstract Classes
4. Testing
    - Test Inputs / Expected Outputs
    - Automated Testing
    - Regression Testing

Class Diagram


Roster
+string positions[4]
+int numberOfPositionsNeeded
+int numberOfPossiblePositions
+int numberOfEvents
+events *rosterArray
+Roster();
+ events* getEvents()
+void Crea1ɐRoster()
+ int getNumberOfEvents
+void setNumberOfEvents
Relation
1..n
Event
+int numberOfStaffNeeded
+Person* rosterOfPeople
string eventName;
int weekNumber
+events()
+getNumberOfStaffNeeded()
+setNumberOfStaffNeeded()
+getWeekNumber()
+setWeekNumber()
+setEventName()
+getEventName()
+getNumberStaffRequired()
+setNumberStaffRequired()
+~events()
1
Relation
1..n
Person
+ string personName
+ int competencies[]
+int age
+person()
+void setPersonName()
+String getPersonName()
+ void getContactInformation()
+ void setAge()
+ int setAge()
+~person()
Extends
Extends
Adults
+ int workingWithChildrenNumber
+ int getWorkingWithChildrenNum
+ setWorkingWithChildrenNum()
+ void addContactInformation()
+void removeContactInformation()
Child
+ string contactInformation
+ int contactCount
+void addContactInformation()
+ void removeContactInformation()

Class Descriptions

The program will contain Roster, Event and Person (with its two child classes).
A roster will contain several event objects, each of which will contain several person objects.
This structure considers the logistics of creating a roster, giving the roster class access to all event and person information.
Code is reused through the use of inheritance from the person class to its child classes adult and child.

User Interface

The user of this program is a Organizing a team of people for a term. To interact with the program they use the command line. When the user starts the program they are presented with a list of options to choose from.

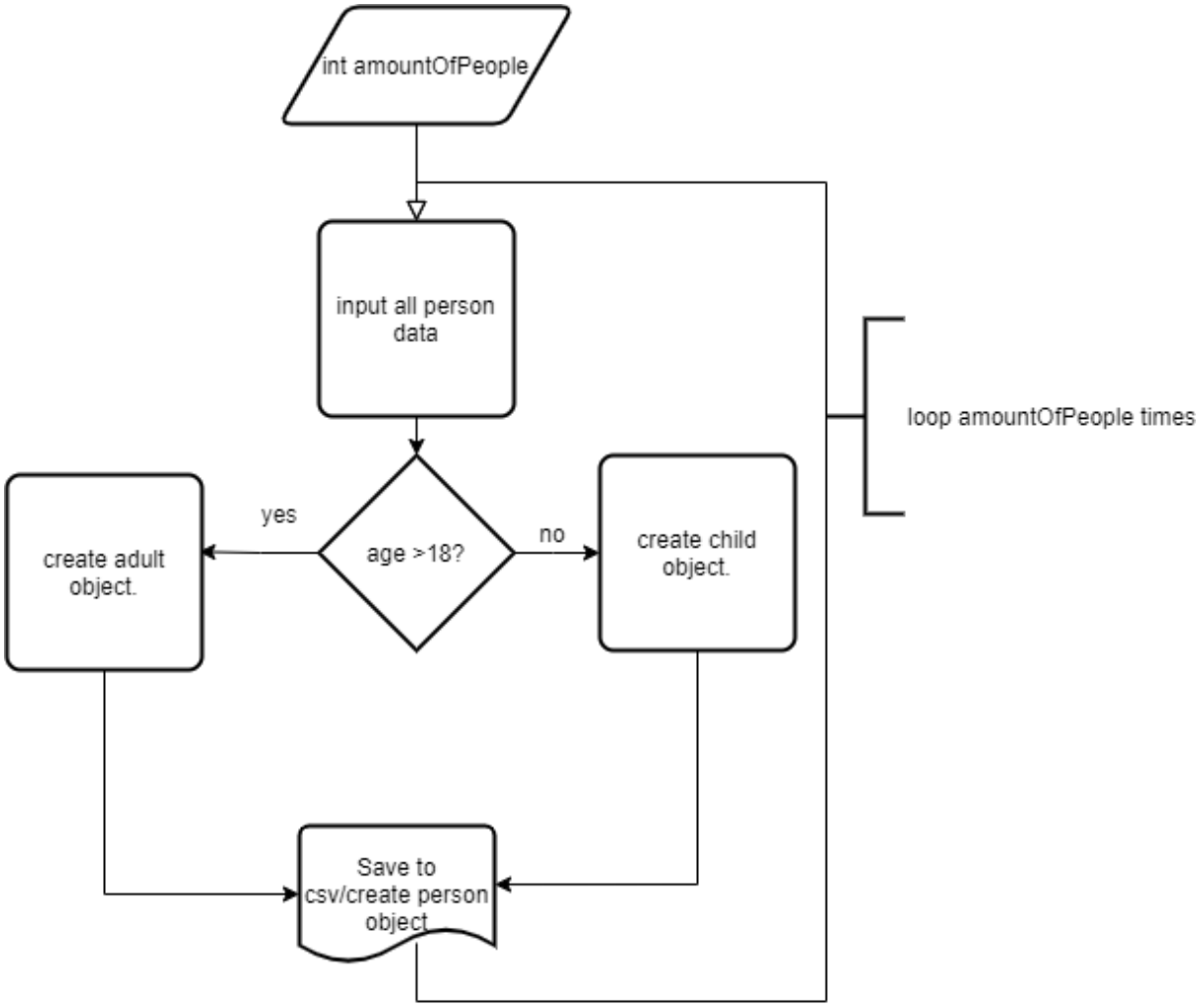
```
Welcome!

Please select from one of the following options:

1. Add a Person to the Team
2. List the Team
3. Remove a Person from the Team
4. Create a New Roster.
5. View the Previous Roster.
```

Algorithm Design

Adding new people objects with user entry:


int amountOfPeople
input all person data
loop amountOfPeople times
age >18?
yes
no
create adult object.
create child object.
Save to csv/create person object